

Message Text

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ACTION EUR-12

INFO OCT-01 ISO-00 OIC-02 IO-10 NSF-02 NAS-01 CIAE-00

PM-03 INR-07 L-02 ACDA-10 NSAE-00 PA-02 RSC-01 PRS-01

SP-02 USIA-15 TRSE-00 SAJ-01 FEA-01 AEC-07 AID-05

CEA-01 CIEP-02 COME-00 DODE-00 EB-07 FPC-01 H-02

INT-05 NSC-05 OMB-01 SAM-01 OES-05 SS-15 STR-04

FRB-01 AGR-10 /145 W

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P 301730Z JAN 75

FM USMISSION NATO

TO SECSTATE WASHDC PRIORITY 9836

UNCLAS SECTION 1 OF 2 USNATO 0511

E.O. 11652: NA

TAGS: TGEN, ENRG, NATO

SUBJECT: NATO SCIENCE - SCIENCE COMMITTEE MEETING AT NATO
FEBRUARY 6-7, 1975 - PROPOSAL FOR SCIENCE COMMITTEE CON-
FERENCE ON STRUCTURE AND PROPERTIES OF WOOD

OES FOR SIVERING AND HEMILLY - PLEASE PASS TO DR. NIERENBERG

REF: USNATO 245

SUMMARY: EXPERTS FROM BELGIUM, DENMARK, FRG, US, AND UK MET
AT NATO ON 24 JANUARY AND PREPARED PROPOSAL FOR SCIENCE
COMMITTEE (SC) CONFERENCE ON STRUCTURE AND PROPERTIES OF
WOOD. US PARTICIPANT WAS PROFESSOR W.A. COTE, DIRECTOR,
BROWN CENTER FOR ULTRASTRUCTURE STUDIES STATE UNIVERSITY OF
NEW YORK, SYRACUSE, NEW YORK. GROUP CONCLUDED THAT SCIENCE COM-
MITTEE CONFERENCE INTERDISCIPLINARY FORMAT PRESENTS UNIQUE
AND VALUABLE OPPORTUNITY FOR FURTHERING PROGRESS IN
FIELD. IF PROPOSED CONFERENCE APPROVED BY SCIENCE COMMITTEE (SC),
THIS WOULD CALL FOR ALLOCATION BY SC OF 1,900,000 BF FROM FUNDS
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AVAILABLE UNDER PROGRAM PLANNING ITEM OF SC BUDGET.

CONFERENCE WOULD TAKE PLACE IN FALL OF 1975 OR SPRING OF 1976.

HIGHLIGHTS OF PROPOSAL FOLLOW. COMPLETE TEXT (ASG.SEA (75)022,
DATED 30 JANUARY), POUCHED TO DEPARTMENT OES HEMILLY. END SUMMARY.

BEGIN TEXT.

I. INTRODUCTION

TIMBER IS AN OBIQUITOUS MATERIAL AND ON A WORLD-WIDE BASIS 10 TO THE NINETH POWER TONS OF WOOD ARE CONSUMED ANNUALLY; THIS IS EQUIVALENT TO THE TOTAL AMOUNT OF IRON AND STEEL PRODUCED EACH YEAR. THE IMPORTANCE OF WOOD WILL CERTAINLY INCREASE IN FUTURE YEARS SINCE AMONG ALL CONSTRUCTION MATERIALS IT IS THE ONLY RENEWABLE RESOURCE. FURTHERMORE, ITS PROCESSING REQUIRES RELATIVELY SMALL AMOUNTS OF ENERGY, AND THE ENERGY COST PER UNIT OF USEFUL PROPERTY IS AMONG THE LOWEST OF COMMON CONSTRUCTION MATERIALS (E.G. ON SIXTH THAT OF PRE-STRESSED CONCRETE AND ONE EITHTH THAT OF STEEL FOR AN EQUIVALENT TENSILE STRENGTH).

THE PAST HAS WITNESSED STUDIES OF WOOD ANATOMY AND ULTRA-STRUCTURE ON THE ONE HAND AND OF MECHANICAL AND PHYSICAL PROPERTIES ON THE OTHER, WITH ONLY LIMITED ATTEMPTS TO MARRY THE TWO APPROACHES. STUDIES OF THESE INTERRELATIONSHIPS ARE NEEDED FOR A BETTER UNDERSTANDING OF THE PROPERTIES LEADING TO A MORE EFFECTIVE UTILIZATION OF THIS MATERIAL. MOREOVER, A FULLER UNDERSTANDING OF THESE RELATIONSHIPS COULD BE OF GREAT VALUE IN SYNTHETIC APPROACHES TO COMPOSITE MATERIALS DESIGNED TO EMULATE THE UNIQUE PROPERTIES OF WOOD.

THE STRUCTURE/PROPERTY RELATIONSHIP IN WOOD CAN BE TREATED AT SEVERAL LEVELS OF MAGNITUDE - FROM MACROSCOPIC TO SUB-MICROSCOPIC. ALTHOUGH MUCH REMAINS OT BE LEARNED ABOUT THE INFLUENCE OF ENVIRONMENTAL FACTORS ON EVENTUAL STRUCTURAL PROPERTIES (E.G. SOIL QUALITY, MINERAL CONTENT, GROWTH RATE, HUMIDITY, TEMPERATURE, ETC.) THE PRESENT PROPOSAL DELIBERATELY EXCLUDES THIS ASPECT, IN AN EFFORT TO ACHIEVE MANAGEABILITY AND EFFECTIVENESS. THUS, THE CHEMISTRY AND BIOLOGY OF WOOD FORMATION IS EXCLUDED. RATHER, EMPHASIS WILL BE ON THE EFFECT OF VARIATION IN ULTRASTRUCTURE, AS DIFFERENTIATED FROM THE CAUSES OF THESE VARIATIONS, ON THE RPROPERTIES WHICH MAKE WOOD ATTRACTIVE AS A CONSTRUCTIONAL MATERIAL.

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II. BACKGROUND (DELETED).

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INFO OCT-01 ISO-00 OIC-02 IO-10 NSF-02 NAS-01 CIAE-00

PM-03 INR-07 L-02 ACDA-10 NSAE-00 PA-02 RSC-01 PRS-01

SP-02 USIA-15 TRSE-00 SAJ-01 FEA-01 AEC-07 AID-05

CEA-01 CIEP-02 COME-00 DODE-00 EB-07 FPC-01 H-02

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III. CONFERENCE PURPOSE AND GOALS

A CONFERENCE IS PROPOSED TO STUDY IN DEPTH THE INTER-RELATIONSHIPS BETWEEN THE RHEOLOGY AND PERMEABILITY OF TIMBER AND ITS MACROSCOPIC, MICROSCOPIC AND CHEMICAL STRUCTURE. WHILE OTHER PROPERTIES OF WOOD ARE OF OBVIOUS IMPORTANCE, THESE ARE CONSIDERED TO BE PARTICULARLY CRITICAL FOR GENERAL APPLICATIONS. SUCH ASSESSMENT CAN BE ACHIEVED SATISFACTORILY ONLY BY A TRULY INTERDISCIPLINARY APPROACH. THE KNOWLEDGE AND EXPERIENCE OF PHYSICISTS, CHEMISTS AND ENGINEERS ON RELATED MATERIALS SUCH AS POLYMERS, CERAMICS AND REINFORCED PLASTICS ARE ESSENTIAL IN BRINGING A FRESH NEW PERSPECTIVE TO THE WOOD SCIENTIST. CONSEQUENTLY ABOUT 50 PARTICIPANTS WOULD NEED TO BE INVOLVED IN SUCH A CONFERENCE.

PLENARY SESSIONS SHOULD PROVIDE THE PARTICIPANTS WITH BACKGROUND INFORMATION ON THE DETAILED STRUCTURE OF TIMBER AND ON THE RHEOLOGICAL AND PERMEABILITY CHARACTERISTICS. WORKING GROUPS WOULD APPRAISE POSSIBLE INTERRELATIONSHIPS AND EXAMINE RELEVANT THEORIES FROM OTHER DISCIPLINES, WITH THE GOAL OF IDENTIFYING GAPS IN KNOWLEDGE AND PROPOSING THE EXPERIMENTAL APPROACHES TO CLOSING THESE GAPS.

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THE REPORT OF THE MEETING WOULD BE PUBLISHED AND WIDE DISSEMINATION SOUGHT WITHIN THE RELEVANT SCIENTIFIC COMMUNITY.

IV. CONFERENCE PROGRAMME

A FIVE OR SIX DAY CONFERENCE IS PROPOSED. A SHORT SERIES OF PLENARY LECTURES WOULD ACQUAINT ALL PARTICIPANTS WITH THE CONCEPTS AND PROBLEMS OF THE VARIOUS FIELDS OF RESEARCH. TENTATIVE SUGGESTIONS FOR SUCH PRESENTATIONS INCLUDE RHEOLOGY, ANATOMY AND ULTRASTRUCTURE, PORE STRUCTURE AND FRACTURE MECHANICS. EMPHASIS DURING THE MEETING PERIOD WOULD BE ON INTENSIVE DISCUSSIONS IN SMALL WORKING GROUPS, WHERE EXPERTS IN DIFFERENT DISCIPLINES WOULD SEEK A CONSENSUS ON DELINEATION OF PROBLEM AREAS OF UNCERTAINTY. PRELIMINARY VIEWS ENVISAGE WORKING GROUPS DEALING WITH POROSITY, PERMEABILITY, ELASTICITY

AND STRENGTH. THE LAST DAY OF THE MEETING WOULD BE DEVOTED TO CRITICAL DISCUSSION, IN PLENARY SESSION, OF THE REPORT OF THE WORKING GROUPS.

PARTICIPATION IN THE CONFERENCE WOULD BE BY INVITATION, ON THE BASIS OF AN ESTABLISHED RECORD OF KNOWLEDGE AND RESEARCH ACCOMPLISHED IN THE AREAS CONCERNED. AS INDICATED ABOVE, EFFORTS WOULD BE MADE TO BRING TO BEAR THE EXPERTISE FROM RELATED FIELDS SUCH AS CERAMICS AND SYNTHETIC POLYMERS. TWENTY TO THIRTY POSSIBLE PARTICIPANTS HAVE SO FAR BEEN IDENTIFIED.

PARTICIPANTS WOULD BE ENCOURAGED TO CONTRIBUTE TO A VOLUME OF WORKING PAPERS TO BE DISTRIBUTED WELL IN ADVANCE TO ALLOW THE MEETING ITSELF TO EMPHASIZE DISCUSSIONS RATHER THAN PRESENTATIONS.

END TEXT.

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